## **Rectangular, Standard Type Proximity Sensor**









**Various Sizes** 

Various Protection Circuits





Compact Size (PS08)

Response Frequency (PS08)

## Features

[Common Features]

 Various Sizes Available For Diverse Applications

8×8 mm, 12×12 mm, 17×17 mm, 25×25 mm, 30×30 mm, 40×40 mm, 50×50 mm



#### • IP67 Protection Structure

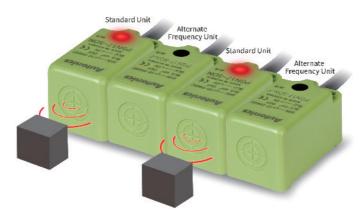
IP67 protection structure allows stable and errorfree operation even in wet or dusty environments.



## [PSN17 Features]

• Operation Status Indicator (Red LED)

The vibrant LED operation indicators (red) allow users to quickly and easily identify operation status.



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# ■ Features [PS08 Features]

- 1 kHz Response Frequency
  - 1 kHz response frequency allows detection of fast moving targets.







(A) Photoelectric Sensors

(B) Fiber Optic

> (C) Door/Area Sensors

(D) Proximity Sensors

(E) Pressure Sensors

(F)

(G) Connectors/ Connector Cables/ Sensor Distribution Boxes/Sockets

(H) Temperatur

*(*0)

(I) SSRs / Power Controllers

Counters

(K) Timers

> (L) Panel Meters

(M) Tacho / Speed / Pulse Meters

> (N) Display

> > O) sensor

(P) Switching Mode Power Supplies

(Q) Stepper Motors & Drivers & Controllers

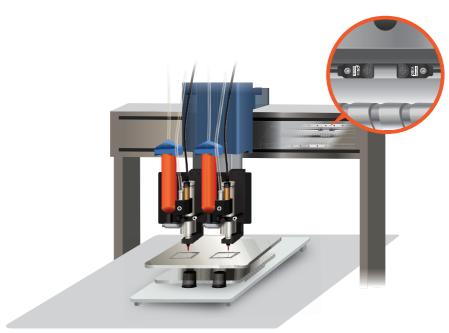
(R) Graphic/ Logic Panels

(S) Field Network Devices

(T) Software

## Application

Compact rectangular inductive proximity sensors PS08 series used for position control of cartesian coordinate robots (linear robots)



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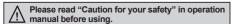
**Rectangular, Standard Type Proximity Sensor** 

### **■** Features

- Excellent noise immunity with specialized sensor IC
- Long life cycle, reliable performance, economical, and easy-to-install
- Operation indicator (red LED)
- Built-in surge protection circuit
- Built-in overcurrent protection circuit (DC types)
- Built-in reverse polarity protection circuit (DC 3-wire types)
- IP67 protection structure (IEC standard)

#### [PS08]

- Compact (8×8 mm) size allows easy installation in tight or limited spaces
- 1 kHz response frequency allows detection of fast moving targets
- Easy installation with standard M3 screws [PSN17]
- Alternate frequency models allow adjacent installation of multiple sensors without interference







Line-up

## Specifications

• DC 2-wire type

%The existing PST17 is upgraded its function and design and changed as PSNT17.
%The case color of Normal Close type is changed from orange to gray.

Model		PSNT17-5DO PSNT17-5DC	PSNT17-5DOU PSNT17-5DCU					
Sensing distance		5mm						
Hysteresis		Max. 10% of sensing distance						
Standard	sensing target	18×18×1mm (iron)						
Setting di	istance	0 to 3.5mm						
Power su (operating	ipply g voltage)	12-24VDC (10-30VDC)						
Leakage	current	Max. 0.6mA						
Response	e frequency <sup>*1</sup>	700Hz						
Residual voltage		Max. 3.5V						
Affection by Temp.		Max. ±10% for sensing distance at ambient temperature 20°C						
Control o	utput	2 to 100mA						
Insulation resistance		Over 50MΩ (at 500VDC megger)						
Dielectric	strength	1,500VAC 50/60Hz for 1 minute						
Vibration		1mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours						
Shock		500m/s² (approx. 50G) in each X, Y, Z direction for 3 times						
Indicator		Operation indicator: Red LED						
Environ- Ambient temperature		-25 to 70°C, storage: -30 to 80°C						
ment	Ambient humidity	35 to 95%RH, storage: 35 to 95%RH						
Protection	n circuit	Surge protection circuit, Over-current protection circuit						
Protection structure		IP67 (IEC standard)						
Cable		Ø4mm, 2-wire, 2m (AWG22, Core diameter: 0.08mm, Number of cores: 60, Insulator out diameter: Ø1.25mm)						
Approval		CE						
Unit weight		Approx. 71g						

<sup>※1:</sup> The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

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<sup>\*</sup>Environment resistance is rated at no freezing or condensation.

(A) Photoelectric Sensors

### DC 3-wire type

PS Series

XThe existing PST17 is upgraded its function and design and changed as PSN17. \*The case color of PNP output type is changed from orange to gray.

<b>T</b> F 3 3	31103				JOIOI OI FINE OULPL	xt typo 10 oi.	angea	go to g.	,-	Sensors
Model		PS08-2.5DN PS08-2.5DP PS08-2.5DN2 PS08-2.5DP2	PS08-2.5DNU PS08-2.5DPU PS08-2.5DN2U PS08-2.5DP2U	PS12-4DN PS12-4DP PS12-4DN	PS12-4	4DPU	PS50- PS50-	0-30DN 0-30DP 0-30DN2 0-30DP2		(B) Fiber Optic Sensors
Sensing distance		2.5mm		4mm			30mm			1
Hysteresi		Max. 20% of sensi	ing distance	_	f sensing distance	,				(C) Door/Area
	sensing target	8×8×1mm (iron)		12×12×1mm	ı (iron)			0×1mm (iron)		Sensors
Setting di		0 to 1.7mm		0 to 2.8mm			0 to 21	1mm		(D)
Power su		12-24VDC								(D) Proximity Sensors
	on voltage)	(10-30VDC) Max. 10mA								Julio
				T-0011-			T_01.17			(E) Pressure
	se frequency*1			500Hz			50Hz			Pressure Sensors
Residual		Max. 1.5V  Max. ±10% for sensing distance at ambient temperature 20°C								4
Affection I Control o	<del></del>	Max. ±10% for ser	nsing distance at arribi	ient temperatu	ure 20°C					(F) Rotary
	n resistance	Over 50MΩ (at 50	INVIDC megger)							Encoders
	c strength	1,500VAC 50/60H								(G) Connectors/
Vibration		+ '	t frequency of 10 to 55	Hz (for 1 min)	in each X, Y, Z di	rection for 2	hours			Connector Cables/ Sensor Distribution
Shock		500m/s² (approx. 5	50G) in each X, Y, Z di		,					Boxes/Sockets
Indicator		Operation indicato	or: Red LED							(H) Temperature
	Ambient temperature	-25 to 70°C, storag	ge: -30 to 80°C							Temperature Controllers
ment	Ambient humidity		orage: 35 to 95%RH							(1)
Protection	n circuit	<del> </del>	circuit, Over-current pro	otection circui	it, Reverse polarity	y protection	circuit			SSRs / Power Controllers
Protection	structure	IP67 (IEC standard								ı
		Ø2.5mm, 3-wire, 1		Ø4mm, 3-wir	re, 2m		Ø5mm	n, 3-wire, 2m		(J)
Cable		AWG28, Core diar Number of cores:	,	VIVIC55 CO	ro diameter: 0 08r	mm Nijimber	- of core	es: 60, Insulator ou	ut diameter: Ø1 25	Counters
		Insulator out diame	- /	AVVOLL, JU.	e diameter. o.cc	.lfII, Number	UI COIC	S. DU, Illoulator ou	il diameter. 2	1
		Case: PC, Standar			resistant Acrylonitr		Case:	: PBT, Standard cal	able (black):	(K) Timers
Meterial		Polyvinyl chloride		butadiene sty Polyvinyl chl	tyrene, Standard ca loride (PVC)	able (black):		inyl chloride (PVC).		
Approval		CE		<del></del>						(L) Panel Meters
Weight*2		Approx. 30g (approx.	ox. 16g)		(approx. 62g)	ال براادست		ox. 256g (approx. 22		
• PSN	Series	DONAT EDN			Te case color or in	10many Oc	JSEU Ly	rpe is changed froi	m orange to gray.	(M) Tacho /
Model		PSN17-5DP PSN17-5DN2 PSN17-5DP2 PSN17-5DPU PSN17-5DP2U	PSN17-8DN2 PSN PSN17-8DP2 PSN PSN17-8DNU PSN PSN17-8DPU PSN	N17-8DN-F N17-8DP-F N17-8DN2-F N17-8DNU-F N17-8DPU-F N17-8DN2U-F	PSN25-5DN PSN25-5DP PSN25-5DN2 PSN25-5DP2	PSN30-10 PSN30-10 PSN30-10 PSN30-10	DP DN2	PSN30-15DN2	PSN40-20DN PSN40-20DP PSN40-20DN2 PSN40-20DP2	Speed / Pulse Meters  (N) Display Units  (O)
Sensing	distance		8mm		5mm	10mm	$\longrightarrow$	15mm	20mm	Sensor Controllers
Hysteresi		Max. 10% of sensi			Jonn	10		, 10	2011	1
	sensing target	18×18×1mm (iron)				30×30×1mr	ım (iron)	45×45×1mm (iron)	) 60×60×1mm (iron)	(P) Switching
Setting di		` '	0 to 5mm		0 to 3.5mm	0 to 7mm	( - /	,	0 to 14mm	Mode Power Supplies
Power su	upply	12-24VDC								(0)
(operation	on voltage)	(10-30VDC)								(Q) Stepper Motors & Drivers
	consumption	Max. 10mA	<del>-</del>					<del>-</del>		& Drivers & Controllers
	se frequency*1		200Hz		300Hz	250Hz		200Hz	100Hz	(R)
Residual		Max. 1.5V	· -!:-taras at amb	· + + = == norate	2000					Graphic/ Logic
Affection   Control o	· · · · · · · · · · · · · · · · · · ·	Max. ±10% for ser	nsing distance at ambi	ient temperatu	ire 20°C					Panels
	n resistance	Over 50MΩ (at 50	MANUAL MEGGET)							(S) Field
	c strength	1,500VAC 50/60H								Network Devices
Vibration		,	t frequency of 10 to 55	6Hz (for 1 min)	in each X, Y, Z di	rection for 2	hours			Devices
Shock		<del>'</del>	50G) in X, Y, Z directio	,	, , , , , , , , , , , , , , , , , , , ,					(T) Software
Indicator		Operation indicato	or: Red LED							Software
Environ-	Ambient temperature	-25 to 70°C, storag	ge: -30 to 80°C							
ment	Ambient humidity		orage: 35 to 95%RH							į
Protection		<u> </u>	Surge protection circuit, Over-current protection circuit, Reverse polarity protection circuit							1
	n structure	,	IP67 (IEC standard)							f
Cable			Ø4mm, 3-wire, 2m (AWG22, Core diameter: 0.08mm, Number of cores: 60, Insulator out diameter: Ø1.25)  Case: Heat-resistant Acrylonitrile butadiene styrene, Standard cable (black): Polyvinyl chloride (PVC)							ſ
Meterial Approval		Case: Heat-resista	ant Acryloniune butaun	ene styrene, c	standaru cabie (bie	ack): Polyvii	1yl Criioi	ilde (PVC)		ĺ
Weight*2								ĺ		
Weigin		Approx. 71g Approx. 70g Approx. 111g Approx. 185g						i		

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### • AC 2-wire type

Model	PSN25-5AO PSN25-5AC	PSN30-10AO PSN30-10AC	PSN30-15AO PSN30-15AC	PSN40-20AO PSN40-20AC					
Sensing distance	5mm	10mm	15mm	20mm					
Hysteresis	Max. 10% of sensing of	Max. 10% of sensing distance							
Standard sensing target	25×25×1mm (iron)	30×30×1mm (iron) 45×45×1mm (iron)		60×60×1mm (iron)					
Setting distance	0 to 3.5mm	0 to 7mm	0 to 10.5mm	0 to 14mm					
Power supply (operating voltage)	100-240VAC (85-264V	100-240VAC (85-264VAC)							
Leakage current	Max. 2.5mA	Max. 2.5mA							
Response frequency*1	20Hz	20Hz							
Residual voltage	Max. 10V	Max. 10V							
Affection by Temp.	Max. ±10% for sensing	Max. ±10% for sensing distance at ambient temperature 20°C							
Control output	5 to 200mA	5 to 200mA							
Insulation resistance	Over 50MΩ (at 500VD	Over 50MΩ (at 500VDC megger)							
Dielectric strength	1,500VAC 50/60Hz for	1,500VAC 50/60Hz for 1 minute							
Vibration	1mm amplitude at freq	1mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours							
Shock	500m/s <sup>2</sup> (approx. 50G)	500m/s² (approx. 50G) in X, Y, Z direction for 3 times							
Indicator	Operation indicator: Re	Operation indicator: Red LED							
Environ- Ambient tempera	ture -25 to 70°C, storage: -3	-25 to 70°C, storage: -30 to 80°C							
ment Ambient humidity	35 to 95%RH, storage	: 35 to 95%RH							
Protection circuit	Surge protection circui	Surge protection circuit							
Protection structure	IP67 (IEC standard)	IP67 (IEC standard)							
Cable		Ø4mm, 2-wire, 2m (AWG22, Core diameter: 0.08mm, Number of cores: 60, Insulator out diameter: Ø1.25mm)							
Approval	CE	CE							
Unit weight	Approx. 65g	Approx. 106g		Approx. 152g					

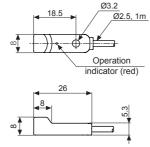
X1: The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

## Dimensions

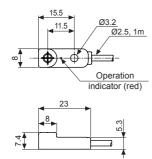
(unit: mm)

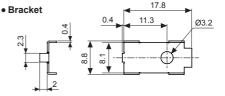
## ● PS08

Standard type

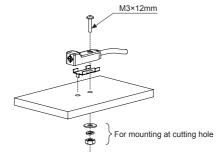


Upper sensing type

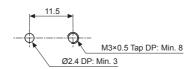




Installing bolts must be a M3×12mm truss bolt and tightening strength should be max. 5kgf.cm. If installing this unit not as this method, it may cause damage to the functions.

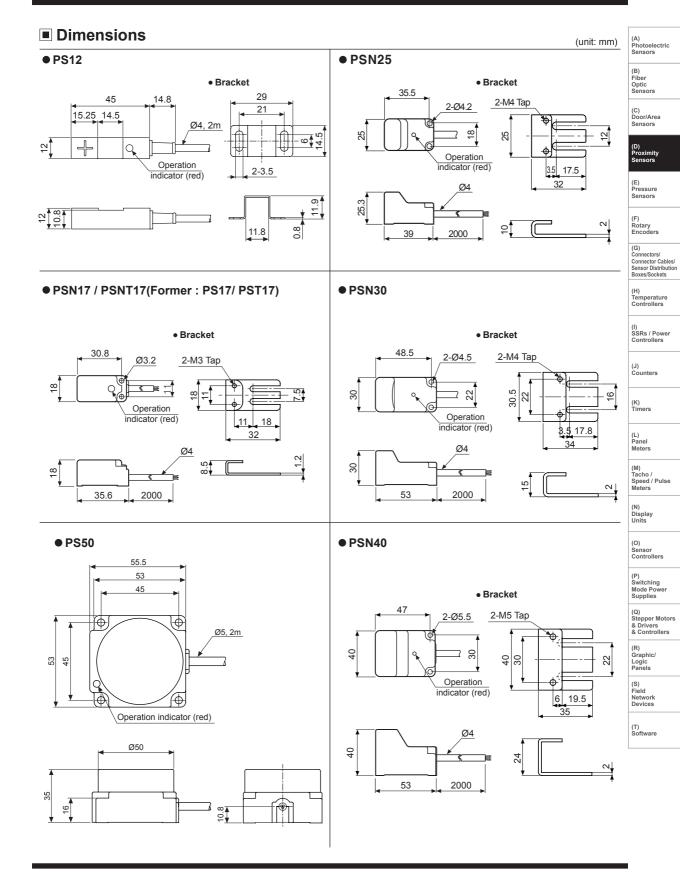


• Mounting hole cut-out



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<sup>\*</sup>Environment resistance is rated at no freezing or condensation.

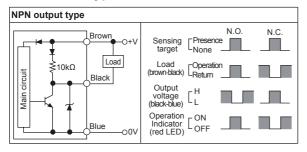


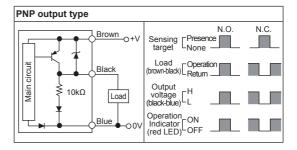
Autonics D-75

## **PS/PSN Series**

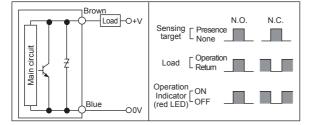
## **■** Control Output Diagram And Load Operation

## O DC 3-wire type

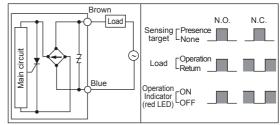




### O DC 2-wire type

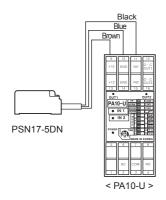


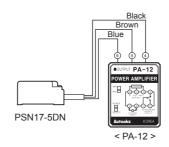
## AC 2-wire type



## Connections

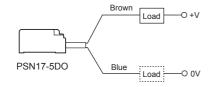
## O DC 3-wire type





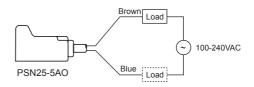
XThere is NPN/PNP selection switch in PA-12.

#### O DC 2-wire type



XThe load can be connected to either wire.

#### AC 2-wire type

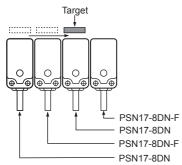


\*\*The load can be connected to either wire.

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## Proper Usage

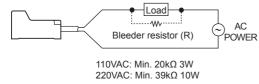
## O Differential frequency



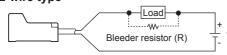
When installing several proximity sensor closely, it may cause malfunction due to mutual interference. Therefore, please use differential frequency for the application \*\*Differential frequency type is only for 17 square.

### O In case of the load current is small

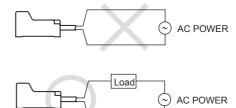
#### AC 2-wire type



• DC 2-wire type



## O Connection of the power supply



When using DC 2-wire and AC 2-wire type, a load must be connected before applying power; otherwise, components can be damaged.

It may cause return failure of load by residual voltage. If the load current is under 5mA, please make sure the residual voltage is less than the return voltage of the load by connecting a bleeder resistor in parallel with the load as shown in the diagram.

$$R \le \frac{Vs}{I}(k\Omega)$$
  $P > \frac{Vs^2}{R}(W)$ 

[I: Action current of load, R: Bleeder resistance, P: Permissible power] Please make the current on proximity sensor smaller than the return current of load by connecting a Bleeder resistor in parallel.

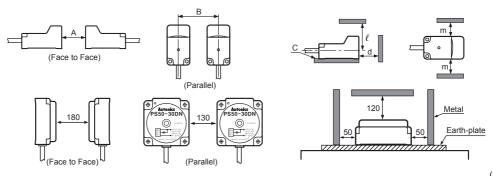
WW value of Bleeder resistor should be bigger for proper heat dissipation.

$$R \le \frac{Vs}{Io\text{-loff}} (k\Omega)$$
  $P > \frac{Vs^2}{R} (W)$ 

Vs: Power supply, Io: Min. action current of proximity sensor loff: Return current of load, P: Number of Bleeder resistance watt

### Mutual-interference & Influence by surrounding metals

When several proximity sensors are mounted close to one another a malfunction of the may be caused due to mutual interference. Therefore, be sure to provide a minimum distance between the two sensors as below chart indicates.



(unit: mm)

								`
Mode	PS08	PS12	PSN17 / PSNT17		PSN25	PSN30		PSN40
Item	2.5mm	4mm	5mm	8mm	5mm	10mm	15mm	20mm
A	16	24	30	48	30	60	90	120
В	16	24	36	40	40	50	65	70
С	5	5	5	5	5	5	5	5
d	15	12	15	24	15	30	45	60
ł	11	18	24	33	25	30	45	45
m	8	12	18	20	20	25	35	35

(A) Photoelectric Sensors

(B) Fiber Optic

> (C) Door/Area Sensors

(D) Proximity Sensors

(E) Pressure Sensors

(F)

(G) Connectors/ Connector Cables/ Sensor Distribution Boxes/Sockets

(H) Temperature Controllers

(I) SSRs / Power Controllers

(J) Counters

> K) Fimers

> > -) anel leters

(M) Tacho / Speed / Pulse Meters

(N) Display Units

> O) ensor

(P) Switching Mode Power Supplies

(Q) Stepper Motors

& Drivers & Controllers

(R) Graphic/ Logic Panels

Network Devices

(T) Software

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